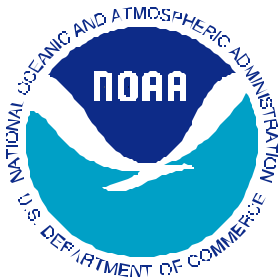


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Working Together to Save Lives

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National Weather Service Strategic Plan for
FY 2003 - FY 2008



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Foreword

From our beginnings in the 19th Century, the National Weather Service (NWS) has depended on our employees, partnerships, advances in scientific understanding, and improvements in technology to carry out our core mission of protection of life and property and enhancing the Nation's economy. As we look forward into the 21st Century, the NWS is making fundamental changes to our business processes, but our dependence on our people, partnerships, science, and technology will continue. Today, partners extend beyond the cooperative observers of the 19th Century, to government agencies at all levels, academic and research institutions, and sectors of the economy unknown when the Weather Bureau, precursor agency of today's NWS, was established in 1890. Advances in science and technology offer extraordinary opportunities to continue improving our services as we work together with our partners to meet America's needs.

This plan confirms our commitment to be America's No Surprise Weather Service. Our existing goals and priorities have driven us to new heights of accuracy and timeliness. But new themes have emerged and demand attention. Predicting the weather for even a day was once an act of faith – tomorrow's NWS will extend the limits of skill in weather and climate forecasting to days, weeks, and seasons and will work with other components of our parent agency, NOAA, and our partners to meet America's expanding needs for seamless services. Weather forecasting once stopped at the ocean's surface – today's NWS includes oceanography as an integral part of our predictions of the coupled ocean/atmosphere system. Weather also once stopped at the earth's surface when river forecasts were based solely on observed rain and snow – tomorrow's NWS will continue to integrate weather and climate predictions into longer-range and more-accurate predictions of fresh water supplies and flood threats. A basic sense of human curiosity drove our 19th century forebears to maintain quality observations and archive them for posterity – tomorrow's NWS will build on this observational legacy with a full recognition of the value of environmental observations to critical issues facing humankind.

America's vulnerability to weather, water, and climate variability is rising as more of the population moves into harm's way and national and global economies become more complex. Extreme weather and water events cause \$11 billion in damages annually. In 2001 and 2002, more than 90% of Presidentially declared disasters were weather related. National and global economies are becoming so complex and interdependent that disruption in one place can lead to costs and delays in other parts of the Nation or world. Our advancing economy and heightened security concerns drive emerging service needs undreamed of by our 19th Century founders, such as air quality and space weather prediction.

As a public agency, we have a special responsibility to be open in planning and carrying out our role in the weather, climate, and water enterprise we share with the public, academic and private sectors. Our commitment to openness derives in part from the ideal of a more transparent government. But we also know our mutual success depends on how well our partners can count on us to carry out the plans we make and deliver the information we promise. Consistent with our commitment to openness, the NWS Strategic Plan is available for public comment and will be subject to a review and update cycle coordinated with a similar cycle for the National Oceanic and Atmospheric Administration (NOAA) Plan.

The NOAA Strategic Plan is the guiding document of an improved planning and management system. NOAA's planning, programming, and budgeting cycle will link program plans, annual operating plans, and the entire NOAA budget to the NOAA strategic plan. The NWS and all other NOAA organizational elements have strategic plans, each conforming with the NOAA Plan, so that all NOAA programs, and the entire NOAA budget, are traceable to the NOAA Strategic Plan. Ultimately, all of our workforce will understand their roles in meeting these agency priorities and themes.

To preserve these linkages, the NWS Strategic Plan follows the structure of the NOAA Strategic Plan. NOAA's Plan identifies high-level Goals and Cross-Cutting Priorities and uses common mission strategies (Monitor and Observe; Understand and Describe; Assess and Predict; and Engage, Advise, and Inform) to address each goal. The NWS Plan takes these same Goals and Cross-Cutting Priorities and describes the NWS role in each one. For each Goal and Priority a table includes those parts of the NOAA strategies relevant to NWS (shaded in grey), and identifies specific NWS activities and partners critical to each NOAA strategy (in blue). An appendix provides the metrics NWS uses to measure and target performance over the life of the Plan. Other appendices provide an organization chart and a glossary of terms.

Since its publication in 1999, the previous NWS Strategic Plan – "Vision 2005: National Weather Service Plan for Weather, Water, and Climate Services 2000-2005"– guided significant accomplishments for the agency: continued improvement in the accuracy and timeliness of our services, a transition to interactive digital forecast operations, a commitment to performance-based management, and an independent evaluation as the U.S. Government's only "Straight A's" Agency, among others. This new plan sets the mark for continued advancements in the 21st Century. It is the framework document for the annual operating plans of all NWS components and for all NWS program plans to make sure NWS plans for science, technology, services, investments, infrastructure, human resources, etc., all work together toward common goals.

The American people deserve and will continue to demand a responsive and efficient Government. To achieve the highest levels of Government operation will require a more thorough understanding of how customers and partners use NWS information and services. It also will require managerial structures be in place to ensure cost-efficient operations. Working with our parent organization, NOAA, we will build on the best business practices of the private sector and other Government agencies (Federal, state, and local) to develop a more responsive and efficient agency.

Today's NWS was built by our workforce – employees and contractors. At its best, this Plan will inspire our workforce to build the NWS of the 21st Century.

John J. Kelly,
Assistant Administrator for Weather Services

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Introduction

Rapid science and technological advances in the 21st century promise significant improvements to public safety and economic well being. In the last decade, we increased the lead time for tornado warnings from 6 minutes to ten minutes; in the last two decades, our four-day weather forecasts have become as accurate as our two-day forecasts. However, weather- and water-related deaths still occur; weather-related transportation incidents cost this nation billions of dollars annually; and droughts and floods impact the Nation in many areas.

The National Oceanic and Atmospheric Administration's (NOAA) National Weather Service (NWS) serves the American public through a partnership with other Government agencies, academia, nonprofit organizations, and the private sector. We work closely with our partners in all aspects of the forecast process from research, to observation collection, to forecast dissemination. We will rely on this effective partnership to better understand and apply technology and science to continue our record of forecast improvements and meet expanding needs for high quality weather, water, and climate services.

Our Mission:

The National Weather Service provides weather, water, and climate forecasts and warnings for the United States, its territories, adjacent waters, and ocean areas for the protection of life and property and the enhancement of the national economy. NWS data and products form a national information data base and infrastructure which can be used by other governmental agencies, the private sector, the public, and the global community.

Our Vision is to be America's no surprise weather service – a world-class team of professionals who:

- Produce and deliver quality information (forecasts and observations) you can trust when you need them most
- Rapidly incorporate proven advances in science and technology
- Measure our performance to describe our skill and improve the value of our services
- Strive to eliminate weather- and water-related fatalities and improve the economic value of weather information

We Value:

- Service above self
- Our customers and partners
- Respect and trust of others and the diversity of our agency
- Open exchange of information and ideas
- Commitment to integrity, teamwork, self-improvement, high standards, and the scientific approach to our mission
- A diverse, innovative, and empowered work force

Our focus will be to work with our partners to provide weather, water, and climate information and services that are accurate, timely, and relevant to user needs. This strategic plan lays out the path we will take to accomplish our mission, achieve the focus and vision, and integrate our core values throughout NWS.

NOAA GOALS

GOAL 1: PROTECT, RESTORE, AND MANAGE THE USE OF COASTAL AND OCEAN RESOURCES THROUGH ECOSYSTEM -BASED MANAGEMENT

NOAA's mission responsibilities for weather, water, and climate information have too often been thought of as distinct from NOAA's mission responsibilities for fisheries, protected species, and ocean, coastal, and Great Lakes resources. Advances in understanding physical, chemical, and biological cycles of earth's ecosystems will require greater cooperation among previously distinct scientific disciplines and improved coordination among NOAA's earth science missions. The NWS will put greater emphasis on contributions of NWS weather, water, and climate observations and forecasts to ecosystem forecasting; greater attention to using NWS observations and forecasts of atmospheric, surface, riverine, estuarine, and oceanographic conditions to aid fisheries and other resource managers; and greater attention to the potential to cross-utilize observing platforms, e.g. to observe underwater conditions from platforms used for surface conditions today.

Outcome Measures

- Increased number of coastal and marine ecosystems maintained at a healthy and sustainable level.
- Increased social and economic value of the marine environment and resources (e.g., seafood, recreation, and tourism).
- Improved ecological conditions in coastal and ocean protected areas.

Strategy and Measures of Success	NWS Activities	NWS Partners
<p>Invest in improved understanding of ecosystems, identification of regional ecosystems, development of ecosystem health indicators, and new methods of governance to establish the necessary knowledge, tools, and capabilities to fully implement ecosystem-based management of coastal, ocean, and Great Lakes resources.</p> <ul style="list-style-type: none"> • Increased number of models linking climate/weather/atmosphere with ecosystem/hydrology made operational to assess and predict natural and human-induced changes in the ocean and coastal environment. 	<p>Numerical Weather and Climate Prediction Models Hydrologic models and services Ocean/marine program</p>	<p>National Ocean Service (NOS); National Marine Fisheries Service (NMFS); Office of Oceanic and Atmospheric Research Other Federal Agencies State and local government agencies Academic and research institutions</p>
<p>(Objective A) <u>Monitor and Observe</u>: Monitor and observe aspects of ocean, coastal, and Great Lakes areas and associated communities to provide basic information on habitats, resources, human activities, and uses that may impact coastal ecosystems.</p> <ul style="list-style-type: none"> • Increased area covered and number of ecological conditions monitored by state-of-the-art observation systems and platforms that provide necessary information for NOAA's stewardship responsibilities. 	<p>Marine/ocean observation network (buoys; voluntary shipboard observations; Coastal-Marine Automated Network) Cooperative observer program Regional ocean observing Systems Radars</p>	<p>National Environmental Satellite, Data, and Information Service (NESDIS), NOS, NMFS Other Federal Agencies (e.g., DoD, FAA) Marine industry (boating, fishing and shipping) Interstate agencies Private data providers Regional and state climatologists</p>

Strategy and Measures of Success	NWS Activities	NWS Partners
<p>(Objective A) <u>Understand and Describe</u>: Characterize coastal, ocean, and Great Lakes resources and conduct research to understand and describe the linkages among the resource components and processes and human impacts on them, and develop new tools and techniques to facilitate sound management decisions.</p> <ul style="list-style-type: none"> Increased number of techniques and tools that can be used to restore and protect ocean, coastal, and Great Lakes resources.. 	<p>River model research (sediment, pollutant transport, etc.)</p>	<p>NOS Academic and research institutions</p>

GOAL 2: UNDERSTAND CLIMATE VARIABILITY AND CHANGE TO ENHANCE SOCIETY'S ABILITY TO PLAN AND RESPOND

Intraseasonal to interannual climate forecasts will become more accurate and more detailed, and growing climate expertise at local NWS forecast offices will enhance regional specificity of climate forecasts for local customers and partners. The NWS will take advantage of technological advances in climate modeling capabilities and will move proven research results about climate variability into routine operations. Forecasts will be more precise in describing uncertainty and more closely coupled to impacts on segments of society and the economy, aiding, for example, emergency managers, farmers, and energy providers with their resource allocation decisions. NWS will continue to expand coverage and capabilities of the Advanced Hydrologic Prediction Service (AHPS) to translate improved climate predictions to impacts on the Nation's fresh water system, hydroelectric power, and flood control.

NWS recognizes its responsibility to future generations who will use the climatological and oceanographic data we collect. We recognize the importance of gathering quality observations to produce a climate record and will ensure that climate needs are incorporated into weather and ocean observing systems whenever possible. We will invest resources to modernize the Cooperative Observer Program. NWS will do our part to make sure NOAA customers and partners receive an integrated service meeting their needs for information across all time and space scales – whether the information is produced by the NWS or another NOAA element, and whether the initial point of contact is an NWS office or some other NOAA element.

Outcome Measures

- Increased use and effectiveness of climate observations to improve long-range climate, weather, and water predictions.
- Increased use and effectiveness of climate information for decision makers and managers (e.g., for industry, natural resource and water managers, community planners, and public health professionals).
- Increased use of the knowledge of how climate variability and change affect commerce.

Strategy and Measures of Success	NWS Activities	NWS Partners
<p>Monitor and Observe: Invest in needed climate quality observations and encourage other national and international investments to provide a comprehensive observing system in support of climate assessments and forecasts.</p> <ul style="list-style-type: none"> Increased number of long-term observations collected, archived, available, and accessible where random errors and time-dependent biases have been minimized and assessed. 	<p>Surface (Automated Surface Observation System (ASOS), cooperative observer program (COOP))</p> <p>Upper Air (incl. stratosphere; radiosonde, automated aircraft observations, Alaska profilers)</p> <p>Marine/ocean observation network (buoys; voluntary shipboard observations; Coastal-Marine Automated Network)</p> <p>Radar</p> <p>Training program</p> <p>Global Climate Observing System</p> <p>Radiosonde Replacement System</p>	<p>National Environmental Satellite Data and Information Service (NESDIS), Office of Oceanic and Atmospheric Research (OAR)</p> <p>NASA, DOE, DOD, FAA, US Geological Survey (USGS), US Department of Agriculture (USDA), US Coast Guard, and other Federal agencies</p> <p>Mesonet owners</p> <p>International partners</p> <p>National Meteorological Services (NMSs)</p> <p>Private data providers</p> <p>Regional and state climatologists</p> <p>World Meteorological Organization (WMO)</p>
<p>Understand and Describe: Work with national and international partners to increase understanding of the dynamics and impacts of coupled atmosphere/ocean/land systems through research on climate variability and change.</p> <ul style="list-style-type: none"> Increased number of new research findings and progress toward their implementation into NOAA operations. Decreased degree of uncertainty of climate system processes, including radiative forcing, in climate forecast products. 	<p>Advanced Hydrologic Prediction System (AHPS)</p> <p>Numerical Weather Prediction model development; model testbed; seasonal/interannual climate models</p> <p>Joint Center for Satellite Data Assimilation (JCSDA)</p> <p>Training on new research findings and techniques</p> <p>Common modeling infrastructures (e.g., Environmental Systems Modeling Framework (ESMF))</p> <p>Verification methods research and development</p> <p>Global Climate Observing System (GCOS) and GCOS Upper Air Network</p> <p>International data rescue</p>	<p>OAR, NESDIS</p> <p>DoD (Air Force Weather Agency, Naval Oceanographic Office, Fleet Numerical Meteorology and Oceanography Center), DOE</p> <p>State climatologists</p> <p>International climate community</p> <p>Academic and research institutions</p> <p>Atmospheric Observation Panel for Climate</p> <p>WMO</p>
<p>Assess and Predict: Improve interseasonal and interannual climate forecasts to enable regional and national managers to plan better for the impacts of climate variability and change and provide improved regional, national, and international assessments and projections to support policy decisions with objective information.</p> <ul style="list-style-type: none"> Improved skill of climate variability forecast. Increased number, accuracy, and regional specificity of U.S. climate, water, and coastal resource products. 	<p>Hydrometeorological Design Studies Center</p> <p>JCSDA</p> <p>Climate Prediction Activities:</p> <ul style="list-style-type: none"> - Global/Regional Climate Models - Local analysis - Reanalysis - AHPS - seasonal/interannual climate prediction (precipitation/temperature) 	<p>OAR, NESDIS, Office of Global Programs</p> <p>USDA, USGS, US Army Corps of Engineers, Bureau of Reclamation, Federal Emergency Management Agency and other Federal Agencies</p> <p>State and local governments</p> <p>Academic and research Institutions</p>

Strategy and Measures of Success	NWS Activities	NWS Partners
<p>Engage, Advise, and Inform: Work with users of climate information to enable and increase the application of climate information for health and safety, environmental, economic, and community planning, especially for freshwater supply, water quality, and coastal impacts.</p> <ul style="list-style-type: none"> Increased volume of NOAA climate data and information used by NOAA customers. Increased user satisfaction, determined through surveys. 	<p>Education/Outreach Customer Service (Climate Services Program) National, regional, and local climate services programs Pacific Environmental Advocacy Center</p>	<p>OAR, NESDIS Academia (training/education, extension) Commercial weather sector Weather risk sector Media Regional Climate Centers State climatologists</p>

GOAL 3: SERVE SOCIETY’S NEEDS FOR WEATHER AND WATER INFORMATION

More and more sectors of the economy recognize the impacts of weather and water on their businesses and are becoming more sophisticated at using weather and water information to improve performance. Concern for public safety drives NWS to improve the timeliness and accuracy of warnings of all weather-related hazards. To meet these expanding requirements, NWS weather and water predictions need to be at the limits of the skill which science, technology, and a highly-trained workforce can provide. NWS is committed to expand these limits by enhancing observing capabilities; by improving data assimilation to use effectively all the relevant data NWS and others collect; by improving collaboration with the research community through creative approaches like community modeling; by quickly transforming scientific advances in modeling into improved operational products; by improving the techniques used by our expert forecasters; by making NWS information available quickly, efficiently, and in convenient and understandable form (e.g., NDFD); by including information on forecast uncertainty to enhance customer decision processes; by taking advantage of existing and emerging technologies to disseminate this information; and by maintaining an up-to-date technology base and a workforce trained to use all of these tools to maximum effect. But the entire weather and water enterprise is larger than NWS – today and tomorrow the NWS depends on partners in the private, academic, and public sectors (starting with other elements of NOAA) to acquire data, conduct research, provide education and training, help disseminate critical environmental information, and provide advice to make best use of NWS information. NWS will work even more closely with existing partners and will develop new partnerships to achieve greater public and industry satisfaction with our weather and water information and honor our commitment to excellent customer service.

Outcome Measures

- Increased accuracy and amount of lead time (by category of storm type, e.g. hurricanes).
- Increased satisfaction with and benefits from NOAA information and warning services, as determined by surveys and analysis of emergency managers, first responders, natural resource and water managers, public health professionals, industry, government and the public.

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Strategy and Measures of Success	NWS Activities	NWS Partners
<p>Monitor and Observe: Use cost-effective observation systems that meet diverse and expanding societal needs for accuracy, parameters observed, and temporal and geographic coverage.</p> <ul style="list-style-type: none"> Increased observations obtained and used from partners, both international and domestic. Increased observations archived, available, and accessible. Increased number of new multi-use observing systems deployed. Improved effectiveness of NOAA's observing systems. 	<p>Upper Air (radiosonde, automated aircraft observations, Alaska profilers)</p> <p>Radar</p> <p>Surface (Automated Surface Observation System (ASOS), cooperative observer program (COOP))</p> <p>Marine/ocean observation network (buoys; voluntary shipboard observations; Coastal-Marine Automated Network)</p> <p>Snow survey</p> <p>Air quality observations</p> <p>Integrated Flood Observing and Warning System (IFLOWS)</p> <p>Targeted observations</p> <p>Storm Spotter Program</p> <p>Tsunami network (incl. Deep-Ocean Assessment and Reporting of Tsunamis (DART))</p> <p>Fire and soil observations</p> <p>Regional Ocean Observing Systems (e.g., Gulf of Maine network)</p> <p>Volcanic ash observation</p> <p>Global Climate Observing System</p> <p>International data rescue</p>	<p>National Environmental Satellite Data and Information Service (NESDIS), Office of Oceanic and Atmospheric Research (OAR), NOAA Marine and Aviation Operations, Department of Homeland Security (DHS), US Coast Guard (USCG), FAA, DOD, NASA, Minerals Management Service, US Army Corps of Engineers, US Geological Survey (USGS), and other Federal Agencies</p> <p>Stream gauging program (USCG)</p> <p>State, local, regional, and tribal agencies</p> <p>Airlines</p> <p>Mesonet, Automated Flood Warning System owners/operators</p> <p>GOES Data Collection Platform owners/operators</p> <p>NOS cooperative observers</p> <p>Storm spotters</p> <p>Commercial providers of observations</p> <p>International agencies (WMO) and National Meteorological Services (NMSs)</p> <p>European Organization for the Exploitation of Meteorological Satellites (EUMETSAT)</p> <p>Academia</p> <p>Incorporated Research Institutions for Seismology (IRIS)</p> <p>Regional and state climatologists</p>
<p>Understand and Describe: Invest in new technologies, techniques, and weather and water forecast modeling.</p> <ul style="list-style-type: none"> Increased number of modeling advances by government and academia demonstrated to improve the NOAA operational prediction suite. Shortened cycle times from research (government and academic) to operations (e.g., models, technology, and techniques) through the use of testbeds and other methods. Improved accuracy of weather prediction models. Increased number of new research findings and progress toward their implementation in NOAA operations. 	<p>Numerical Weather Prediction Models; model testbeds</p> <p>Collaborative/Common modeling infrastructures (e.g., WRF, Distributed Modeling Intercomparison Project DMIP)</p> <p>Joint Hurricane Testbed</p> <p>COMET/CSTAR Grants</p> <p>Hydrologic research (e.g., VAR)</p> <p>Forecast applications research</p> <p>Techniques development</p> <p>High Performance Computing</p> <p>Visualization and verification</p> <p>Instrument development (ASOS NEXRAD, upper air, COOP)</p> <p>Collaborative forecasting</p> <p>Training</p>	<p>OAR, NESDIS (National Geophysical Data Center)</p> <p>Academic and Research Institutions</p> <p>National Science Foundation, DOD (Air Force Weather Agency, Naval Oceanographic Office, Fleet Numerical Meteorology and Oceanography Center), NASA, and other Federal Agencies</p> <p>UCAR</p> <p>European Centre for Medium-Range Weather Forecasting (ECMWF)</p> <p>U. S. Weather Research Program (USWRP) partners</p>

Strategy and Measures of Success	NWS Activities	NWS Partners
<p>Assess and Predict: Improve forecast and warning capabilities to reduce uncertainty and increase economic benefits.</p> <ul style="list-style-type: none"> Increased use of observation data for verification of and assimilated into weather, ocean, water, and climate prediction models. Increased number of forecasters trained in the newest techniques. Increased volume of forecast and warning information formatted to clarify the uncertainty of an event (e.g., space weather, and water and weather forecasts). Improved performance of weather and water, air quality, and space weather prediction suite. 	<p>Service Programs (Public warnings and forecasts, Fire Weather, Hydrology (water level, water supply, snow), Tsunami, Space Weather, Air Quality, Volcanic Ash)</p> <p>Joint Center for Satellite Data Assimilation (JCSDA)</p> <p>Numerical Weather/Ocean Prediction Models (Global, Regional, Local, Ensembles, Geomagnetic, Ionospheric)</p> <p>Advanced Hydrologic Prediction Service (AHPS)</p> <p>Interactive Forecast Preparation System (IFPS)</p> <p>IT Infrastructure (AWIPS, High performance computers)</p> <p>Training</p>	<p>OAR, NOS</p> <p>Commercial Weather Sector Water Management Agencies</p> <p>FAA, BLM, USGS, DOD, EPA</p> <p>USACE, USCG, DHS National Resources Conservation Service (NRCS) and other Federal Agencies</p> <p>Intergovernmental Oceanographic Commission (IOC)</p>
<p>Engage, Advise, and Inform: Promote appropriate responses to hazardous weather- and water-related conditions, in order to enhance human preparedness. Use traditional delivery methods, the Internet, and other e-commerce approaches to deliver products that customers need for safety-related decisions, operating efficiencies, and better resource management.</p> <ul style="list-style-type: none"> Increased number of favorable scores on public surveys of citizen knowledge about appropriate actions under hazardous weather- and water-related conditions. Increased percentage of the public reporting timely receipt of warnings as measured by public surveys. Increased number of communities with plans in place to act on weather warnings and to reduce the impacts of coastal hazards. Increased community knowledge of, use of, and satisfaction with NOAA information that supports local air quality monitoring and forecast programs. Increased assistance to international partners to improve response capabilities to weather and water predictions. 	<p>Customer Service</p> <p>Education/Outreach</p> <p>StormReady</p> <p>TsunamiReady</p> <p>Customer/Partner workshops</p> <p>Dissemination (currently NOAA Weather Radio, EMWIN, NWWS, Internet, FOS, NWSTG/NOAAPORT)</p> <p>National digital Forecast Database (NDFD)</p> <p>International Satellite Communications System (ISCS)</p> <p>Social science studies</p>	<p>NESDIS</p> <p>Media</p> <p>Commercial Weather Sector</p> <p>Weather Risk Sector</p> <p>American Red Cross</p> <p>National Safety Council</p> <p>Primary/Secondary schools</p> <p>Academia (education)</p> <p>FEMA, DHS, DOE</p> <p>Federal, state, and local government</p> <p>Emergency Management</p> <p>Community</p> <p>International agencies and NMSs</p> <p>IOC</p> <p>WMO</p> <p>Regional Intergovernmental Organizations (SOPAC, SPREP)</p> <p>Community-based organizations</p>

GOAL 4: SUPPORT THE NATION'S COMMERCE WITH INFORMATION FOR SAFE, EFFICIENT, AND ENVIRONMENTALLY SOUND TRANSPORTATION

NWS services are critical to the safe and efficient transportation of people and goods by sea, air and over land. The approximately \$825 billion per year transportation and public utility sector is almost entirely

weather and climate dependent¹. NWS will work to provide aviation forecast improvements to help mitigate air traffic delays and reduce weather-related aviation accidents; improve snow precipitation and water forecasting which impacts surface transportation; and improve ocean and wind forecasting which impacts sea-borne transport from the high seas to our coasts and in the Great Lakes. NWS is committed to work with our partners to continue to improve weather information services to support all modes of transportation.

Outcome Measures

- Increased use and effectiveness of environmental information for planning for marine, air, and surface transportation systems.
- Increased safety and productivity of transportation systems.

Strategy and Measures of Success	NWS Activities	NWS Partners
<p>Monitor and Observe: Expand advanced technology monitoring and observation systems to provide accurate, up-to-date environmental data, such as weather and oceanographic observations, hydrographic surveys, and precise positioning coordinates.</p> <ul style="list-style-type: none"> • Increased reliability, frequency, and use of marine, aviation, and surface transportation-related observations. 	<p>Radar Automated Surface Observing System (ASOS) Cooperative Observer Program (COOP) Upper Air (radiosonde, automated aircraft observations, Alaska profilers) Marine/ocean observation network (buoys, voluntary shipboard observations, Coastal-Marine Automated Network) Regional Ocean Observing Systems (e.g., GoMOOS)</p>	<p>National Environmental Satellite Data and Information Service (NESDIS), Office of Oceanic and Atmospheric Research (OAR), NOAA Marine and Aviation Operations, National Ocean Service (NOS) DOT, DOD, FAA, DHS and other federal agencies Marine industry (shipping, fishing, boating) Aviation industry Recreation and tourism industries Regional and state climatologists International agencies (WMO and National Meteorological Services (NMSs) Surface transportation industry</p>
<p>Understand and Describe: Develop and apply new technologies, techniques, and models.</p> <ul style="list-style-type: none"> • Shortened cycle time from research (government and academia) to operations (e.g., new techniques, improved products). • Increased capabilities of data acquisition technologies, processing, and analysis. 	<p>Testbed Aviation Volcanic Ash Marine Observation Network Testbed Joint Hurricane Testbed</p>	<p>OAR Other Federal Agencies Academic and Research Institutions</p>

¹Dutton, Bulletin of the American Meteorological Society, September 2002, page 1303, 1307 using calendar year 2000 Gross Domestic Product.

Strategy and Measures of Success	NWS Activities	NWS Partners
<p>Assess and Predict: Develop and implement sophisticated assessment and prediction capabilities to support decisions on aviation, marine, and surface navigation efficiencies, coastal resource management, and transportation system management, operations and planning.</p> <ul style="list-style-type: none"> Increased percentage of major U.S. ports where oceanographic “nowcast” (present conditions) and weather and marine forecast models are implemented. Increased accuracy and use of weather and marine forecasts to increase the efficiency of all land, water, and air transportation systems. 	<p>Marine/Ocean Services Aviation Volcanic Ash Ice Program Advanced Hydrologic Prediction Service (AHPS) AWIPS Training Program</p>	<p>NOS Other Federal Agencies Marine industry Aviation industry Private sector (meteorological and technological) Surface transportation industry</p>
<p>Engage, Advise, and Inform: Work at the national and regional levels and use advanced delivery systems, such as the Internet and other e-commerce approaches, to provide customers with the products and services they need for safety-related decisions, operating efficiencies, better management of coastal resources, and improved transportation system management and planning.</p> <ul style="list-style-type: none"> Increased percentage of U.S. ports where oceanographic and weather data are delivered in real time. Increased user satisfaction with NOAA information within the transportation and coastal management sectors. 	<p>Education/ Outreach</p>	<p>NOS Other Federal Agencies Private sector (weather and technological) Academia (Education) Marine industry Aviation industry Media</p>

NOAA CROSS-CUTTING PRIORITIES

Six themes cut across all NOAA elements including NWS:

- C Integrated Global Environmental Observation and Data Management System
- C Environmental Literacy, Outreach, and Education
- C Sound, State-of-the-Art Research
- C International Cooperation and Collaboration
- C Homeland Security
- C Organizational Excellence: Leadership, Human Capital, Facilities, Information Technology, and Administrative Products and Services

CROSS-CUTTING PRIORITY 1: INTEGRATED GLOBAL ENVIRONMENTAL OBSERVATION AND DATA MANAGEMENT SYSTEM

Integrated, improved and an increased number of observations are key to improving our understanding, analysis, and prediction of the earth’s environment – from space to the atmosphere to water to ecosystems to the oceans. Working with local, regional, national, and international partners, the NWS will establish an integrated, user-friendly global to local observational system that provides more timely and accurate monitoring of the coupled ocean-atmosphere-land system to increase the efficiency and effectiveness of observations in environmental operations and research. *Performance measures: user needs better met;*

improvements in coverage, timeliness, reliability and maintainability; promote national, international, regional, and local cooperation.

NWS Activities	NWS Partners
Upper Air (radiosonde, automated aircraft observations, Alaska profilers), radar, surface (ASOS, COOP), marine/ocean observation network (buoys, C-MAN, VOS), Snow Survey, air quality observations, IFLOWS, Targeted observations, storm spotter program, DART, international activities, energy-balance snow modeling, HADS, precipitation frequency studies	NESDIS; OAR; NOS; NMAO; Other Federal Agencies (FAA, DOD, USACE, USCG, NASA, Minerals Management Service (MMS)); Stream Gauging Program (USGS); state, local, regional, and tribal agencies; airlines; marine industry; mesonet/Automated Flood Warning System (AFWS) owners/operators; GOES DCP owners/operators; storm spotters; commercial providers of observations; international agencies and NMSs; EUMETSAT; academia; ECMWF

CROSS-CUTTING PRIORITY 2: ENVIRONMENTAL LITERACY, OUTREACH, AND EDUCATION

To help us meet our mission to protect life and property and enhance the national economy, it is essential to educate our users about our products and services, with the goals of improving their response to natural hazards, aiding state and local management of natural resources; ensuring decision makers not only have access to environmental and hazard information, but also comprehend it and are knowledgeable of appropriate actions to take; and helping all users respond as needed. We will continue to support education in the environmental sciences and particularly encourage young people to pursue science educational opportunities, with a special focus on minority serving institutions to increase participation of under-represented groups in environmental sciences. *Performance measures: improved community and public awareness of the agency's goals and achievements; increase education and outreach materials and services; encourage higher numbers and greater diversity of students pursuing environmental science careers; increase interactions with Minority Serving Institutions; and more agency staff judging science fairs.*

NWS Activities	NWS Partners
Education/outreach, training, Equal Employment Opportunity (EEO) program/ Diversity Program , social science activities, minority serving institution outreach	NOAA's Office of Education and Sustainable Development (ESD); media, private sector, universities, (minority serving institutions), Federal Agencies, American Meteorological Society (AMS), National Weather Association (NWA), other professional societies, community-based organizations, non-profits (HACU, SACNAS, AISES)

CROSS-CUTTING PRIORITY 3: SOUND, STATE-OF-THE-ART RESEARCH

Sound, Reliable State-of-the-Art Research will generate integrated scientific approaches that better align the agency to provide solutions to environmental, economic, and public safety problems. NOAA carries out scientific research and enables others to carry out research by making data/ information available. NWS will foster research efforts on hydrology, weather, climate, and integrating oceanic prediction into the operational

prediction suite. NWS will support other organizations, both in government and in academia, to develop new techniques, technologies and prediction capabilities; to form an integrated understanding of the changing Earth; to underpin environmental analysis, prediction, and management missions and capabilities; and to help ensure integration into operations to help provide a vibrant basis for new products and services required by the Nation and the World. *Performance measures: increase investments in short and long term research; accelerate transfer of knowledge and technology into operations; strengthen external research partnerships.*

NWS Activities	NWS Partners
Numerical Weather Prediction Models (WRF, ESMF), model testbeds; DMIP; COMET/CSTAR grants; applied research (hydrology, forecast applications); techniques development; High Performance Computing; visualization and verification; instrument development; collaborative forecasting; radar; training; hydrologic research (e.g., LDAS, VAR, snowMIP)	OAR, academic and research institutions; NSF, DOD, NASA, and other Federal Agencies; UCAR; ECMWF; USWRP partners; international partners

CROSS-CUTTING PRIORITY 4: INTERNATIONAL COOPERATION AND COLLABORATION

Working with our international partners will foster a two-way exchange of information, technology and training to promote U.S. policies and interests beyond our national borders in earth observation, and weather, water and climate forecasting. Global coverage of observations is important to understanding the Earth's climate and developing models that benefit forecasts for this country, from seasonal climate forecasts to winter and tropical storms. The U.S. public will benefit from these relationships by improved economic and social/political development and scientific understanding. *Performance measures: increased initiatives for international technical assistance and transfers; more bilateral relationships and multilateral conferences contributing to agency objectives.*

NWS Activities	NWS Partners
International activities, support for developing nations, international technology transfer (meteorology, river and flood forecasting, climate), training, ISCS, land/sea global observing systems, Tsunami Program, Volcanic Ash Program	Private sector (meteorological, hydrologic and technological), WMO, IOC, National Meteorological Services, State Department, Other Federal Agencies, Regional Intergovernmental Agencies, international institutes, world financial organizations

CROSS-CUTTING PRIORITY 5: HOMELAND SECURITY

NWS contributions to the Nation's security and disaster management will increase. Our focus will be on activities to detect, prepare, protect, respond to, and recover from the effects of all disasters, whether natural or man-made. The NWS communication infrastructure is an essential element of a national warning capability, and efforts to enhance this capability will continue. We will continue to work with our partners in the private

sector and federal, state and local governments to expand NOAA Weather Radio coverage, increase use of this valuable information medium as an all hazards dissemination source, and explore new methods and technology for the public to access warning and emergency information. In addition, we will work with the Department of Homeland Security, Department of Defense, Department of Energy, and Environmental Protection Agency to broaden our air quality and dispersion forecast capability to support Homeland Security initiatives responding to toxic releases. NWS also has an important role in responding to water-borne agents and potential dam failures. *Performance measures: increased public knowledge of and access to emergency information; improved monitoring, prediction and responsiveness to support emergency operations; improved certainty of operations for critical services.*

NWS Activities	NWS Partners
NWR, air quality forecasting, education/outreach, StormReady, Continuity of Operations, water-borne dispersion forecasting, dam/levee failure flood forecasting, radar, training	Private sector (weather and technological); emergency management community; Federal, state, local, and tribal agencies; U.S. Army Soldier Biological Chemical Command; DHS; DOE; Defense Threat Reduction Agency

CROSS-CUTTING PRIORITY 6: ORGANIZATIONAL EXCELLENCE: Leadership, Human Capital, Facilities, Information Technology and Administrative Products and Services

The NWS workforce is the heart and soul of the NWS and the starting point for our commitment to organizational excellence. Our human resource strategic plan and management practices reflect this commitment and embody our vision and core values. We are committed to recruit, retain, and develop the diverse, highly trained, and customer-service-oriented people we need to embrace change, value individual differences, and promote teamwork in serving our customers and partners. Developing and maintaining a comprehensive training program for all employees will enable NWS to capitalize on its strong workforce and develop tomorrow's leaders. Facilities, information technology systems, administrative support, workplace safety and security – all are essential to provide the environment and infrastructure our people need to get the job done. Our facilities management strategic plan will ensure our work is performed in locations and with equipment that promote longevity, efficiency, safety, and effective use of both human and natural resources. Attention to an integrated architecture for information technology will guide cost-effective decisions. Improved budget, financial and cost management systems focus on cost-effective mission delivery of products and services to our customers and partners. *Performance measures: customer-focused, interdependent, mission-aligned programs; recruit and train a skilled workforce; improved facilities planning and maintenance; implement an enterprise information technology architecture including advanced high-bandwidth networks, super-computing capabilities and flexible sources for information delivery; and improved and integrated administrative infrastructure.*

NWS Activities	NWS Partners
Diversity Program, Equal Employment Opportunity (EEO) Program, occupational safety and health, physical security, facilities, information technology (High Performance Computing, AWIPS, NWSNET), human capital, training, environmental compliance, budget/financial/cost management; NOAA SFA, employee exit interviews	OPM, NOAA line/staff offices, private sector, National Weather Service Employees Organization (NWSEO), academia (education), minority serving institutions

APPENDIX A - NWS PERFORMANCE METRICS

NWS is recognized as a “best practice” leader within the US government in using meaningful metrics and focusing on performance to improve services. NWS is committed to continued leadership in performance-based management. This appendix presents specific performance metrics which support the performance measures of the NWS plan. NWS performance metrics reported under the Government Performance Results Act (GPRA) are highlighted in red. NWS performance metrics will be reviewed as part of the annual planning cycle – improved metrics will be introduced when they are more useful to our customers and/or more accurately represent NWS performance.

Appendix A is arranged into three tables: Table 1 – Performance Measures (metrics tied to NOAA’s Goal Strategies), Table 2 Cross – Cutting Priorities/Performance Metric Tracking (metrics tied to NOAA’s Cross-Cutting Priorities; for completeness, some of these are repeated from Goal Strategies metrics), and Table 3 – Outcome Measures Performance Metric Tracking (metrics tied to NOAA’s Outcome Measures). Each table contains the following three columns:

Line Office (NWS) Measure: Many of these metrics are founded on the performance of NWS products and services (e.g., the lead time of NWS tornado warnings), others are founded on customer surveys (e.g. use of NOAA Weather Radio), and a few are founded on critical program milestones (e.g. implement a weather research and forecasting community model by 2005).

Baseline: Some metrics do not have an established baseline – for these cases a year is shown when the baseline will be created (est. baseline (year)).

Target: Each metric has a target (in some cases yet to be established (est. target (year))). NWS expects to meet these targets based on the FY04 Presidents Budget and approved out-year budget profiles. The annual review of the NWS strategic plan will adjust these targets as necessary to reflect the most recent approved budgets.

Appendix A Table 1
Performance Measures - NWS

Goal 1: Protect, restore, and manage the use of coastal and ocean resources through ecosystem-based management

Objective A. Protect and restore ocean, coastal, and Great Lakes resources

Strategy: Monitor & Observe

NOAA Performance Measure	Line Office Measure	Baseline	Target
Increased area covered and number of ecological conditions monitored by state-of-the-art observation systems and platforms that provide necessary information for NOAA's stewardship responsibilities	areal coverage of observation systems supporting NOAA's stewardship responsibilities	est. baseline (2004)	est. target (2005)

Goal 2. UNDERSTAND CLIMATE VARIABILITY AND CHANGE TO ENHANCE SOCIETY'S ABILITY TO PLAN AND RESPOND

Strategy: Monitor & Observe

NOAA Performance Measure	Line Office Measure	Baseline	Target
Increased number of long-term observations collected, archived, available, and accessible where random errors and time-dependent biases have been minimized and assessed.	Increase number of modernized COOP sites	est. baseline (2004)	est. target (2005)

Strategy: Understand & Describe

NOAA Performance Measure	Line Office Measure	Baseline	Target
Increased number of new research findings and progress toward their implementation into NOAA operations.	Number of new research findings implemented in operations	est. baseline (2004)	est. target (2005)

Strategy: Assess & Predict

NOAA Performance Measure	Line Office Measure	Baseline	Target
Improved skill of climate variability forecasts.	US Seasonal Temperature Forecast skill	.20 (2003 goal)	.23 (2008)
Improved skill of climate variability forecasts.	Implement next generation coupled ocean-atmosphere climate model	n/a	Complete (2005)
Increased number, accuracy, and regional specificity of U.S. climate, water, and coastal resource products.	Increase number of relevant U.S. climate and water products	30 (2003)	est. target (2004)
Increased number, accuracy, and regional specificity of U.S. climate, water, and coastal resource products.	Specify baseline accuracy of U.S. climate and water products	est. baseline (2004)	est. target (2005)
Increased number, accuracy, and regional specificity of U.S. climate, water, and coastal resource products.	Issue regionally specific U.S. climate and water products	0 (2003)	est. target (2004)
Increased number, accuracy, and regional specificity of U.S. climate, water, and coastal resource products.	Update National Precipitation Frequency Standards	1 Region (2003)	10 Regions (US) (2007)

Strategy: Engage, Advise & Inform

NOAA Performance Measure	Line Office Measure	Baseline	Target
Increased number of new instances where NOAA information is integrated into decision-support and management systems, including fishery management plans.	Number of field focal points trained in climate services	20 (2003)	90 (2007)
Increased user satisfaction, determined through surveys	Number of climate information requests handled by local focal points	est. baseline (2004)	est. target (2005)

Goal 3. SERVE SOCIETY'S NEEDS FOR WEATHER AND WATER INFORMATION

Strategy: Monitor & Observe

NOAA Performance Measure	Line Office Measure	Baseline	Target
Increased observations obtained and used from partners, both international and domestic	Modernize Cooperative Observer Program	n/a	50% complete (2008)
Increased observations obtained and used from partners, both international and domestic	Number of observations obtained and used from partners	est. baseline (2004)	est. target (2005)
Increased observations archived, available, and accessible.	Radiosonde Replacement (number of sites)	15 (2003)	102 (2006)
Increased observations archived, available, and accessible.	Modernize Marine Observation Network	n/a	complete (2008)
Increased observations archived, available, and accessible.	Number of observations archived, available, accessible	est. baseline (2004)	est. target (2005)
Increased number of new multi-use observing systems deployed.	Number of new multi-use observing systems deployed	est. baseline (2004)	est. target (2005)
Improved effectiveness of NOAA's observing systems.	User satisfaction with effectiveness of NWS observing systems.	est. baseline (2004)	est. target (2005)

Strategy: Understand & Describe

NOAA Performance Measure	Line Office Measure	Baseline	Target
Increased number of modeling advances by government and academia demonstrated to improve the NOAA operational prediction suite.	Deploy Advanced Hydrologic Prediction Service (AHPS) capability at river forecast sites	8% (2002)	50% complete (2008)
Shortened cycle times from research (government and academic) to operations (e.g., models, technology, and techniques) through the use of testbeds and other methods.	Establish experimental test beds	n/a	ongoing
Shortened cycle times from research (government and academic) to operations (e.g., models, technology, and techniques) through the use of testbeds and other methods.	Reduce time to implement proven research into operational use	est. baseline (2004)	est. target (2005)
Improved accuracy of weather and air quality prediction models.	Implement the weather research and forecast community model	n/a	complete (2005)
Improved accuracy of weather and air quality prediction models.	Develop and implement the next generation Global/Climate prediction system	n/a	complete (2008)
Increased number of new research findings and progress toward their implementation into NOAA operations.	Sustain the NWS/Cooperative Program for Operational Meteorology, Education, and Training (COMET) outreach and CSTAR programs	n/a	ongoing
Increased number of new research findings and progress toward their implementation into NOAA operations.	Number of solar models transitioned into operations	n/a	2/year (2006)

Strategy: Assess & Predict

NOAA Performance Measure	Line Office Measure	Baseline	Target
Increased use of observation data for verification of and assimilated into weather, ocean, water, and climate predictions models.	Percent of available operational satellite observations used in data assimilation systems	95 (2002)	est. target (2003)
Increased number of forecasters trained in the newest techniques.	Number of forecasters trained in latest techniques	est. baseline (2004)	est. target (2005)
Increased volume of forecast and warning information formatted to clarify the uncertainty of an event (e.g., space weather, air quality, water, and weather forecasts).	Increase number of forecast and warning products formatted to clarify the uncertainty of an event (e.g. weather, water, and space weather forecasts)	est. baseline (2004)	est. target (2005)
Improved performance of NOAA's weather and water, air quality, and space weather prediction suite.	National Air Quality Ozone Forecast	established 2005	establish baseline accuracy 2006
Improved performance of NOAA's weather and water, air quality, and space weather prediction suite.	Number of years needed to achieve 1 day improvement in NWP accuracy (e.g. make 7-day forecast as good as the 6-day forecast)	10 (2003)	5 (2007)
Improved performance of NOAA's weather and water, air quality, and space weather prediction suite.	Increase average warning lead time for NOAA scales G2 level space weather events	15 min (2002)	90 min (2008)

Strategy: Engage, Advise & Inform

NOAA Performance Measure	Line Office Measure	Baseline	Target
Increased number of favorable scores on public surveys of citizen knowledge about appropriate actions under hazardous weather and water-related conditions.	Increased citizen knowledge of preparedness and actions for hazardous weather and water conditions	est. baseline (2005)	est. target (2006)
Increased percentage of the public reporting timely receipt of warnings as measured by public surveys.	Percent of public receiving timely warnings	est. baseline (2004)	est. target (2005)
Increased number of communities with plans in place to act on weather warnings and to reduce the impacts of coastal hazards.	Number of Storm Ready communities	506 (2002)	900 (2007)
Increased number of communities with plans in place to act on weather warnings and to reduce the impacts of coastal hazards.	Number of Tsunami Ready communities	est. baseline (2004)	est. target (2005)
Increased community knowledge of, use of, and satisfaction with NOAA information that supports local air quality monitoring and forecast programs	Increased community knowledge and satisfaction with NWS air quality information	est. baseline (2005)	est. target (2006)
Increased assistance to international partners to improve response capabilities to weather and water predictions.	Provide technical assistance, training, and technology transfer for developing countries modernizing meteorological and hydrologic capabilities.	1 project/bilateral/yr	ongoing

Goal 4. SUPPORT THE NATION'S COMMERCE WITH INFORMATION FOR SAFE, EFFICIENT, AND ENVIRONMENTALLY SOUND TRANSPORTATION

Strategy: Monitor & Observe

NOAA Performance Measure	Line Office Measure	Baseline	Target
Increased reliability, frequency, and use of marine, aviation, and surface transportation-related observations.	User satisfaction with NWS marine, aviation and surface transportation-related observations	est. baseline (2005)	est. target (2006)

Strategy: Understand & Describe

NOAA Performance Measure	Line Office Measure	Baseline	Target
Shortened cycle time from research (government and academia) to operations (e.g., new techniques, improved products.)	Reduce time to implement proven research into operational use (Marine/aviation)	est. baseline (2004)	est. target (205)

Strategy: Assess & Predict

NOAA Performance Measure	Line Office Measure	Baseline	Target
Increased percentage of major U.S. ports where oceanographic "nowcast" (present conditions) and weather and marine forecast models are implemented.	Percentage of major US ports where weather and marine forecast models are implemented.	est. baseline (2004)	est. target (2005)
Increased accuracy and use of weather and marine forecasts to increase efficiency of all land, water, and air transportation systems.	Aviation forecast-accuracy (3 ml visibility; 1000 ft ceiling)	.45 (2003 goal)	.49 (2008)
Increased accuracy and use of weather and marine forecasts to increase efficiency of all land, water, and air transportation systems.	Aviation forecast-false alarm rate (3 ml visibility; 1000 ft ceiling)	.71 (2003 goal)	.66 (2008)
Increased accuracy and use of weather and marine forecasts to increase efficiency of all land, water, and air transportation systems.	Marine wind speed forecast accuracy	.54 (2003 goal)	.58 (2008)
Increased accuracy and use of weather and marine forecasts to increase efficiency of all land, water, and air transportation systems.	Marine wave height forecast accuracy	.66 (2003 goal)	.70 (2008)

Strategy: Engage, Advise & Inform

NOAA Performance Measure	Line Office Measure	Baseline	Target
Increased percentage of U.S. ports where oceanographic and weather data are delivered in real time.	Percent of US ports where oceanographic and weather data are delivered in real time	est. baseline (2004)	est. target (2005)
Increased user satisfaction with NOAA information within the transportation and coastal management sectors.	Implement graphical aviation products capable of cockpit display	n/a	complete (2005)
Increased user satisfaction with NOAA information within the transportation and coastal management sectors.	User satisfaction with NWS information in the transportation sector	est. baseline (2005)	est. target (2006)

Appendix A Table 2

Cross Cutting Priorities/Performance Metric Tracking - NWS

X-Cut 1. INTEGRATED GLOBAL ENVIRONMENTAL OBSERVATION AND DATA MANAGEMENT SYSTEM

NOAA Strategy	NOAA Performance Measure	Line Office Measure	Baseline	Target
NOAA will develop an Integrated Global Environmental Observation and Data Management System based on user requirements and an integrated architecture.	Percent of user observation and datamanatement requirements met by system.	Number of observations archived, available, accessible	est. baseline (2004)	est. target (2005)
NOAA will develop an Integrated Global Environmental Observation and Data Management System based on user requirements and an integrated architecture.	Percent of user observation and datamanatement requirements met by system.	User satisfaction with effectiveness of NWS observing systems	est. baseline (2004)	est. target (2005)
NOAA will develop an Integrated Global Environmental Observation and Data Management System based on user requirements and an integrated architecture.	Decreased uncertainty in observational measures and elimination of observation gaps, redundancies, and loses to achieve better coverage, timeliness, reliability, and maintainability of observations for users.	Increased number of modernized COOP sites	est. baseline (2004)	est. target (2005)
NOAA will develop an Integrated Global Environmental Observation and Data Management System based on user requirements and an integrated architecture.	Decreased uncertainty in observational measures and elimination of observation gaps, redundancies, and loses to achieve better coverage, timeliness, reliability, and maintainability of observations for users.	Modernize Cooperative Observer Program	n/a	50% complete (2008)
NOAA will develop an Integrated Global Environmental Observation and Data Management System based on user requirements and an integrated architecture.	Decreased uncertainty in observational measures and elimination of observation gaps, redundancies, and loses to achieve better coverage, timeliness, reliability, and maintainability of observations for users.	Radiosonde Replacement (number of sites)	15 (2003)	102 (2006)
NOAA will promote national and international cooperation in developing this system	Increased use of other nations' observation platforms, resources, and assets to meet user observation and data management	Maintain or expand quality and quantity of global GSN and GUAN data available for use by NWS and WMO	est. baseline (2004)	est. target (2005)
NOAA will promote regional and local cooperation in developing this system.	Increased use of other nations' observation platforms, resources, and assets to meet user observation and data management	Number of new multi-use observing systems deployed	est. baseline (2004)	est. target (2005)
NOAA will promote regional and local cooperation in developing this system.	Increased use of other nations' observation platforms, resources, and assets to meet user observation and data management	Modernize Marine Observation Network	n/a	complete (2008)
NOAA will promote regional and local cooperation in developing this system.	Increased number of partnerships that promote regional and local cooperation in global and coastal observations and data management programs.	Number of observations obtained and used from partners	est. baseline (2004)	est. target (2005)

X-Cut 2. ENVIRONMENTAL LITERACY, OUTREACH AND EDUCATION

NOAA Strategy	NOAA Performance Measure	Line Office Measure	Baseline	Target
NOAA will actively encourage and promote careers in the environmental sciences	Increased number and diversity of college students graduating each year in fields related to fisheries, coastal, ocean, climate, atmospheric, and social sciences.	Number of students entering experiments in science fairs (categories of physical science/environmental science)	10,000 (2002)	11,200 (2008)
NOAA will actively encourage and promote careers in the environmental sciences	Increased number of NOAA staff serving as judges for, and NOAA awards presented at, American primary and secondary school science fairs.	Number of school visits (annually)	13,000 (2002)	15,000 (2008)
NOAA will actively encourage and promote careers in the environmental sciences	Increased number of NOAA staff serving as judges for, and NOAA awards presented at, American primary and secondary school science fairs.	Number of AMS DataStreme members	n/a	4200 (2008)

X-Cut 3. SOUND, STATE-OF-THE-ART-RESEARCH

NOAA Strategy	NOAA Performance Measure	Line Office Measure	Baseline	Target
NOAA will accelerate the transfer of knowledge and technology into operational use and ecosystem management	Increased use of models and assessments among scientists, economists, social scientists, operations, and ecosystem managers inside and outside NOAA.	Establish experimental test beds	n/a	ongoing
NOAA will accelerate the transfer of knowledge and technology into operational use and ecosystem management	Increased transfer of NOAA models, forecasts, products, and services from research into operations and ecosystem management.	Number of new research findings implemented in operations.	est. baseline (2004)	est. target (2005)
NOAA will accelerate the transfer of knowledge and technology into operational use and ecosystem management	Increased transfer of NOAA models, forecasts, products, and services from research into operations and ecosystem management.	Deploy Advanced Hydrologic Prediction Service (AHPS) capability at river forecast sites	8% (2002)	50% complete (2008)
NOAA will accelerate the transfer of knowledge and technology into operational use and ecosystem management	Increased transfer of NOAA models, forecasts, products, and services from research into operations and ecosystem management.	Reduce time to implement proven research into operational use	est. baseline (2004)	est. target (2005)
NOAA will accelerate the transfer of knowledge and technology into operational use and ecosystem management	Increased transfer of NOAA models, forecasts, products, and services from research into operations and ecosystem management.	Develop and implement the next generation Global/Climate prediction system	n/a	complete (2008)
NOAA will accelerate the transfer of knowledge and technology into operational use and ecosystem management	Increased transfer of NOAA models, forecasts, products, and services from research into operations and ecosystem management.	Number of solar models transitioned into operations	n/a	2/year (2006)
NOAA will accelerate the transfer of knowledge and technology into operational use and ecosystem management	Increased transfer of NOAA models, forecasts, products, and services from research into operations and ecosystem management.	Reduce time to implement proven research into operational use (marine/aviation)	est. baseline (2004)	est. target (2005)

NOAA will strengthen external partnerships and increase interactions by ensuring that 50% of new research funds are spent within the external community (e.g., university, private sector) via competitive, peer-reviewed proposals.	Increased innovation and diversity of talent in NOAA related research and development.	Implement the weather research and forecast community model	n/a	complete (2005)
NOAA will strengthen external partnerships and increase interactions by ensuring that 50% of new research funds are spent within the external community (e.g., university, private sector) via competitive, peer-reviewed proposals.	Increased number of research students trained on NOAA related research.	Sustain the NWS/Cooperative Program for Operational Meteorology, Education, and Training (COMET) outreach and CSTAR programs.	n/a	ongoing

X-Cut 4. INTERNATIONAL COOPERATION AND COLLABORATION

NOAA Strategy	NOAA Performance Measure	Line Office Measure	Baseline	Target
NOAA will promote international consensus and cooperation in support of NOAA's mission and U.S. foreign policy through multilateral and bilateral conferences and relationships	Increased number of organizational objectives achieved through multilateral conferences or bilateral relationships	Continue U.S. participation in International Coordination Group for the Tsunami Warning System in the Pacific (ITSU) activities, including ITSU officers and plenary meetings and IOC/ITSU tsunami workshops.	n/a	ongoing
NOAA will promote international consensus and cooperation in support of NOAA's mission and U.S. foreign policy through multilateral and bilateral conferences and relationships	Increased number of organizational objectives achieved through multilateral conferences or bilateral relationships	Expand U.S. Tsunami Program to the Caribbean area	n/a	complete (2005)
NOAA will promote international consensus and cooperation in support of NOAA's mission and U.S. foreign policy through multilateral and bilateral conferences and relationships	Increased number of organizational objectives achieved through multilateral conferences or bilateral relationships	Represent NOAA at a minimum of 1 international meeting per year involving Volcanic Ash Advisory Center Operations	n/a	ongoing
NOAA will promote international consensus and cooperation in support of NOAA's mission and U.S. foreign policy through multilateral and bilateral conferences and relationships	Increased number of organizational objectives achieved through multilateral conferences or bilateral relationships	Continue U.S. efforts to standardize global response to volcanic activity	n/a	ongoing

NOAA will promote international consensus and cooperation in support of NOAA's mission and U.S. foreign policy through multilateral and bilateral conferences and relationships	Increased number of organizational objectives achieved through multilateral conferences or bilateral relationships	Represent NOAA at a minimum of 1 international buoy conference per year	n/a	ongoing
NOAA will promote international consensus and cooperation in support of NOAA's mission and U.S. foreign policy through multilateral and bilateral conferences and relationships	Increased number of organizational objectives achieved through multilateral conferences or bilateral relationships	Continue and/or establish bi lateral agreements.	6 (2003)	est. target (2004)
NOAA will leverage United Nations Specialized Agency agreements, as well as bilateral relationships with individual countries, to maximize the development and use of research, observations, environmental science services, and enironmental management for the mutual benefit of all parties.	Increased number of NOAA technical assistance initiatives and capacity-building transfers implemented.	Work with the international community to develop consistent standards, formats and protocols for observations and associated data management.	ongoing	ongoing
NOAA will leverage United Nations Specialized Agency agreements, as well as bilateral relationships with individual countries, to maximize the development and use of research, observations, environmental science services, and enironmental management for the mutual benefit of all parties.	Increased number of NOAA technical assistance initiatives and capacity-building transfers implemented.	Replace obsolete telecommunications and forecasting workstations and provide training.	10 countries (2003)	14 countries
NOAA will promote international consensus and cooperation in support of NOAA's mission and U.S. foreign policy through multilateral and bilateral conferences and relationships	Increased number of organizational objectives achieved through multilateral conferences or bilateral relationships	Continue and/or establish bi lateral agreements.	6 (2003)	est. target (2004)
NOAA will leverage United Nations Specialized Agency agreements, as well as bilateral relationships with individual countries, to maximize the development and use of research, observations, environmental science services, and enironmental management for the mutual benefit of all parties.	Increased number of NOAA technical assistance initiatives and capacity-building transfers implemented.	Use regional/international forums to disseminate information on new affordable data, information systems, and forecasting technology, as they become available. Participate in WMO Conferences, technical commissions, and meetings.	At least 1 conference/forum/yr	ongoing

X-Cut 5. HOMELAND SECURITY

NOAA Strategy	NOAA Performance Measure	Line Office Measure	Baseline	Target
Through its core capabilities, strategic investments, and partnerships, NOAA will expand its support for homeland security, coordinating delivery of its products, services, and capabilities to Federal, state, and local emergency managers and responders, and strengthening its own infrastructure to protect agency personnel, facilities, and information services.	Increased use of NOAA Weather Radio	Percent of U.S. population using NOAA Weather Radio	est. baseline (2004)	est. target (2005)
Through its core capabilities, strategic investments, and partnerships, NOAA will expand its support for homeland security, coordinating delivery of its products, services, and capabilities to Federal, state, and local emergency managers and responders, and strengthening its own infrastructure to protect agency personnel, facilities, and information services.	Increased NOAA Weather Radio broadcast coverage	Number of states with 95% population covered by NWR signal	30/50 (2002)	41/50 (2007)
Through its core capabilities, strategic investments, and partnerships, NOAA will expand its support for homeland security, coordinating delivery of its products, services, and capabilities to Federal, state, and local emergency managers and responders, and strengthening its own infrastructure to protect agency personnel, facilities, and information services.	Enhanced responsiveness to Federal, state, and local requests for support after the release of hazardous materials and during other emergencies.	Upgrade all-hazards meteorological response system (AMRS) to include additional emergency response capability	n/a	complete (2005)
Through its core capabilities, strategic investments, and partnerships, NOAA will expand its support for homeland security, coordinating delivery of its products, services, and capabilities to Federal, state, and local emergency managers and responders, and strengthening its own infrastructure to protect agency personnel, facilities, and information services.	Enhanced responsiveness to Federal, state, and local requests for support after the release of hazardous materials and during other emergencies.	Number of state and local emergency managers trained in NOAA/FEMA weather related hazard courses	6000 (2002)	15,000 (2008)
Through its core capabilities, strategic investments, and partnerships, NOAA will expand its support for homeland security, coordinating delivery of its products, services, and capabilities to Federal, state, and local emergency managers and responders, and strengthening its own infrastructure to protect agency personnel, facilities, and information services.	Increased number of jurisdictions with the capability to access civil emergency information through NOAA/NWS dissemination systems.	Access to NOAA Weather Radio by civil authorities for civil emergency messages	est. baseline (2004)	est. target (2005)

X-Cut 6. ORGANIZATIONAL EXCELLENCE

NOAA Strategy	NOAA Performance Measure	Line Office Measure	Baseline	Target
Human Capital - NOAA will expand workforce training, incentives, succession planning, and other administrative tools to recruit and retain a skilled workforce.		Complete leadership training for all supervisors and leaders	n/a	complete (2005)
Human Capital - NOAA will expand workforce training, incentives, succession planning, and other administrative tools to recruit and retain a skilled workforce.		Expand the National Strategic Training and Education Plan (known as NSTEP) to address all training needs of the work force	n/a	complete (2005)
Human Capital - NOAA will expand workforce training, incentives, succession planning, and other administrative tools to recruit and retain a skilled workforce.		Implement NOAA SFA program	complete actions identified in 2002 SFA (2003)	repeat SFA every 2 years
Human Capital - NOAA will expand workforce training, incentives, succession planning, and other administrative tools to recruit and retain a skilled workforce.		Use NOAA SFA to establish baseline managing diversity performance measures and set targets for 2004 and beyond.	est. baseline (2004)	complete (2008)
Human Capital - NOAA will expand workforce training, incentives, succession planning, and other administrative tools to recruit and retain a skilled workforce.		Determine roles, responsibilities, skill, and competencies needed for future leaders	est. baseline (2003)	est. target (2004)
Human Capital - NOAA will expand workforce training, incentives, succession planning, and other administrative tools to recruit and retain a skilled workforce.		Increase the representation of women, minorities, and people with disabilities in the NWS as compared to the National Civilian Labor Force (NCLF).	1% improvement in under-represented groups (2002)	1%/year ongoing to meet NCLF
Facilities - NOAA will improve processes for requirements development, construction processes, consolidation of services and facilities and increase funding for maintenance		Safety Awareness Training	ongoing	ongoing
Administrative Programs and Services	Improved performance and accountability in management of administrative services, including financial and human resources, electronic government, competitive outsourcing, grants management, and budget and performance integration.	Review exit interview responses to identify problem areas	n/a	annual
Administrative Programs and Services	Improved performance and accountability in management of administrative services, including financial and human resources, electronic government, competitive outsourcing, grants management, and budget and performance integration.	Use cost management data to support budget decisions.	n/a	Improve effectiveness each FY

Administrative Programs and Services	Improved performance and accountability in management of administrative services, including financial and human resources, electronic government, competitive outsourcing, grants management, and budget and performance integration.	Use CAMS, OLAP, and other tools to monitor spending, review variances, and ensure compliance with budget.	n/a	ongoing
Information Technology - NOAA will maintain and improve its technology infrastructure in order to enhance its scientific productivity through seamless sets of observational and forecast products, advanced high-bandwidth networks, super-computing capabilities, and support for increasingly flexible sources for the delivery of information.	Established security accreditation for mission-critical systems.	Achieve a GISRA rating of Level 4 for 100% of NWS unclassified systems.	85% (2002)	100% (2007)
Information Technology - NOAA will maintain and improve its technology infrastructure in order to enhance its scientific productivity through seamless sets of observational and forecast products, advanced high-bandwidth networks, super-computing capabilities, and support for increasingly flexible sources for the delivery of information.	Migration to NOAA IT Enterprise Architecture with an initial focus on NOAA's Network.	Attain a DOC CMM Enterprise Architecture Level 5 rating for NWS IT.	2 (2002)	5 (2007)

Appendix A Table 3

NOAA/NWS Outcome Measure Performance Metric Tracking Sheet

Goal 1: Protect, restore, and manage the use of coastal and ocean resources through ecosystem-based management.

NOAA Outcome Measure	Line Office Measure	Baseline	Target
Increased number of models linking climate/weather/atmosphere with ecosystem/hydrology made operational to assess and predict natural and human-induced changes in the ocean and coastal environment.	Number of models made operational to assess and predict natural and human-induced changes in marine environment	0(2003)	est. target (2004)

Goal 2: Understand climate variability and change to enhance Society's ability to plan and respond.

NOAA Outcome Measure	Line Office Measure	Baseline	Target
Increased use and effectiveness of climate information for decision makers and managers (e.g., for industry, natural resource and water managers, community planners, and public health professionals).	Outreach to user groups to facilitate integration of NWS climate information into decision support and management systems	est. baseline (2004)	est. target (2005)

Goal 3: SERVE SOCIETY'S NEEDS FOR WEATHER AND WATER INFORMATION.

NOAA Outcome Measure	Line Office Measure	Baseline	Target
Increased accuracy and amount of lead time (by category of storm type e.g., hurricanes).	National average tornado warning false alarm rate	0.72 (2003 goal)	0.68 (2008)
Increased accuracy and amount of lead time (by category of storm type e.g., hurricanes).	National average tornado warning accuracy	0.72 (2003 goal)	0.76 (2008)
Increased accuracy and amount of lead time (by category of storm type e.g., hurricanes).	National average tornado warning lead time	12 min (2003 goal)	15 min (2008)
Increased accuracy and amount of lead time (by category of storm type e.g., hurricanes).	Severe Thunderstorm lead time	16 min (2001)	18 min (2007)
Increased accuracy and amount of lead time (by category of storm type e.g., hurricanes).	Severe Thunderstorm accuracy	.80 (2001)	.83 (2007)
Increased accuracy and amount of lead time (by category of storm type e.g., hurricanes).	Severe Thunderstorm false alarm rate	.44 (2001)	.40 (2007)
Increased accuracy and amount of lead time (by category of storm type e.g., hurricanes).	Hurricane track 48-hr forecast error	130 nmi (2003 goal)	126 nmi (2008)
Increased accuracy and amount of lead time (by category of storm type e.g., hurricanes).	Winter storm warning accuracy	.88 (2003 goal)	.90 (2008)
Increased accuracy and amount of lead time (by category of storm type e.g., hurricanes).	Winter storm warning lead time	13 hour (2003 goal)	15 hours (2008)
Increased accuracy and amount of lead time (by category of storm type e.g., hurricanes).	Flash-flood warning accuracy	.87 (2003 goal)	.90 (2008)

Increased accuracy and amount of lead time (by category of storm type e.g., hurricanes).	Flash-flood warning lead time	50 min. (2003 goal)	58 min. (2008)
Increased accuracy and amount of lead time (by category of storm type e.g., hurricanes).	Flash-flood warning false alarm rate	.40 (2002)	.35 (2007)
Increased accuracy and amount of lead time (by category of storm type e.g., hurricanes).	Precipitation forecast (threat; day 1)	.25 (2003 goal)	.27 (2008)
Increased accuracy and amount of lead time (by category of storm type e.g., hurricanes).	River flood warning lead time	est. baseline (2005)	est. target (2006)
Increased accuracy and amount of lead time (by category of storm type e.g., hurricanes).	River flood warning accuracy	est. baseline (2005)	est. target (2006)
Increased accuracy and amount of lead time (by category of storm type e.g., hurricanes).	River flood warning false alarm rate	est. baseline (2005)	est. target (2006)
Increased accuracy and amount of lead time (by category of storm type e.g., hurricanes).	Red flag warning - accuracy	.88 (2001)	.90 (2007)
Increased accuracy and amount of lead time (by category of storm type e.g., hurricanes).	Red flag warning - lead time	9 hr. (2001)	14 hr (2007)
Increased accuracy and amount of lead time (by category of storm type e.g., hurricanes).	National Fire Danger Rating System (NFDRS) forecast temperature error	4.5 deg. (2001)	3.8 deg. (2007)
Increased accuracy and amount of lead time (by category of storm type e.g., hurricanes).	NFDRS forecast wind error	4.5 mph. (2001)	3.8 mph. (2007)
Increased accuracy and amount of lead time (by category of storm type e.g., hurricanes).	NFDRS forecast RH error	.10 (2001)	.08 (2007)
Increased accuracy and amount of lead time (by category of storm type e.g., hurricanes).	Tsunami warning accuracy	est. baseline (2004)	est. target (2005)
Increased accuracy and amount of lead time (by category of storm type e.g., hurricanes).	Tsunami warning timeliness	est. baseline (2004)	est. target (2005)
Increased satisfaction with and benefits from NOAA information and warning services, as determined by surveys and analysis of emergency managers, first responders, natural resource and water managers, public health professionals, industry, government and the public.	Customer satisfaction index	est. baseline (2005)	est. target (2006)

Goal 4: SUPPORT THE NATION'S COMMERCE WITH INFORMATION FOR SAFE, EFFICIENT, AND ENVIRONMENTALLY SOUND TRANSPORTATION.

NOAA Outcome Measure	Line Office Measure	Baseline	Target
Increased use and effectiveness of environmental information for planning for marine, air, and surface transportation systems.	Use and effectiveness of NWS forecast information for planning for marine, air and surface transportation systems	est. baseline (2005)	est. target (2006)
Increased safety and productivity of transportation systems.	Weather related transportation accidents, delays, and disruptions	est. baseline (2005)	est. target (2006)

APPENDIX B - GLOSSARY

AFWA	Air Force Weather Agency
AFWS	Automated Flood Warning System
AHPS	Advanced Hydrologic Prediction Service
AISES	American Indian Science and Engineering Society
AMS	American Meteorological Society
AOPC	Atmospheric Observation Panel for Climate
ASOS	Automated Surface Observing System
AWIPS	Advanced Weather Interactive Processing System; workstation and communications infrastructure used by NWS field offices
BLM	Bureau of Land Management
C-MAN	Coastal-Marine Automated Network
CAMS	Commerce Administrative Management System
CMM	Capabilities Maturity Model (Specific to Enterprise Architecture)
COMET	Cooperative Program for Operational Meteorology, Education, and Training
Continuity of Operations	program to ensure that NWS can sustain all essential operations in the event of a disaster or emergency
COOP	Cooperative Observer Program; non-NWS individuals voluntary providing observations to NWS
CSTAR	Collaborative Science Technology and Applied Research Program
CWSU	Center Weather Service Unit
DART	Deep-ocean Assessment and Reporting of Tsunamis
DHS	U.S. Department of Homeland Security
DMIP	Distributed Modeling Intercomparison Project
DoC	United States Department of Commerce
DoD	United States Department of Defense
DoE	United States Department of Energy
ECMWF	European Centre for Medium-Range Weather Forecasting
EEO	Equal Employment Opportunity
EMWIN	Emergency Manager Weather Information Network
Ensembles	collection of two or more forecasts that verify at the same time
EPA	Environmental Protection Agency
ESD	NOAA's Office of Education and Sustainable Development
ESMF	Environmental Systems Modeling Framework (a common modeling infrastructure for global and climate models)
EUMETSAT	European Organization for the Exploitation of Meteorological Satellites
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FNMOCC	Fleet Numerical Meteorology and Oceanography Center
FOS	Family of Services; an NWS dissemination network
GCOS	Global Climate Observing System
GISRA	Government Information Security Results Act

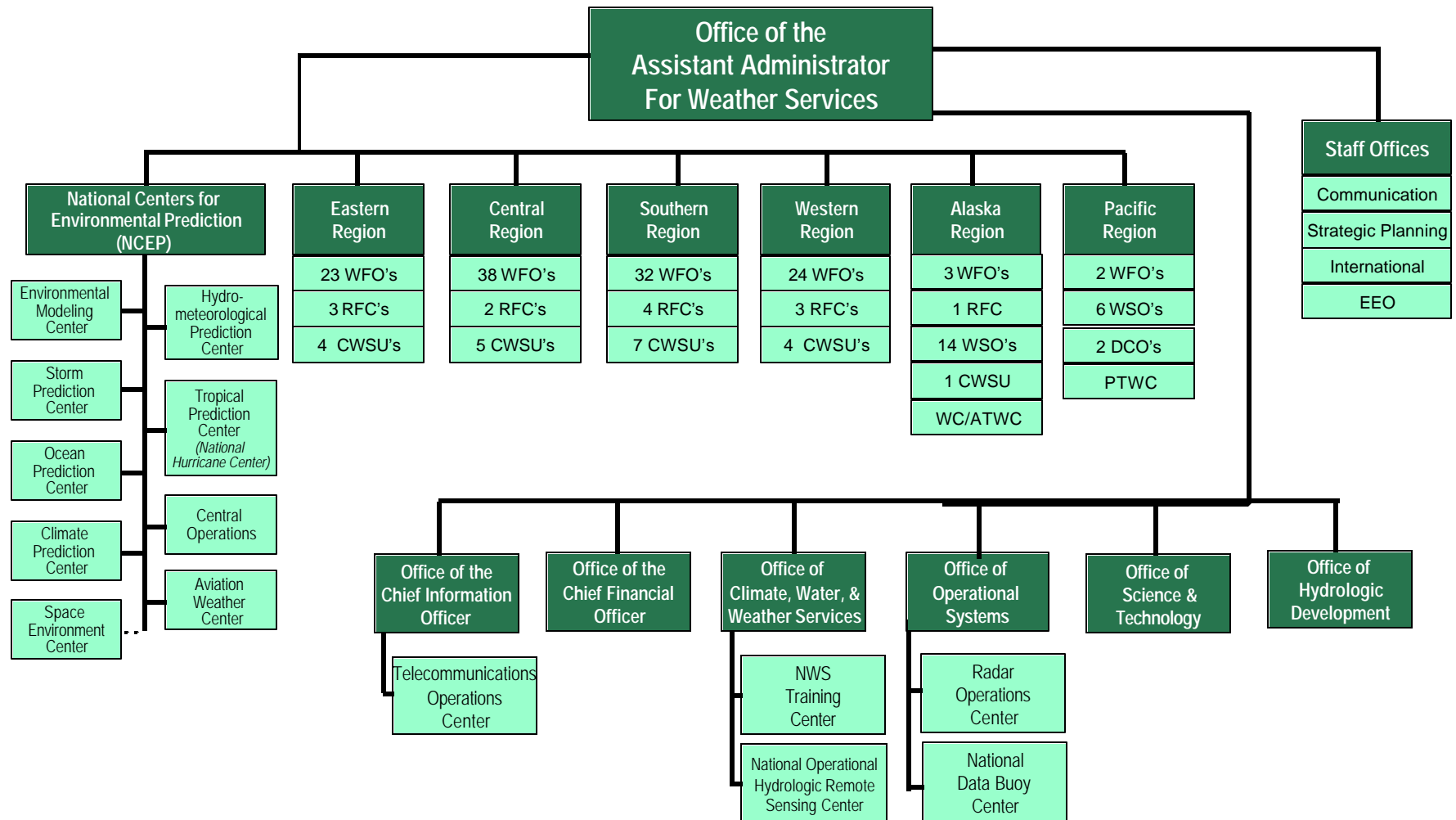
GOES DCP	Geostationary Operational Environmental Satellite Data Collection Platform
GoMOOS	Gulf of Maine Ocean Observation System
GUAN	GCOS Upper-Air Network
HACU	Hispanic Association of Colleges and Universities
HADS	Hydrometeorological Automated Data System
IFLOWS	Integrated Flood Observing and Warning System
IFPS	Interactive Forecast Preparation System
IOC	Intergovernmental Oceanographic Commission
IRIS	Incorporated Research Institutions for Seismology
ISCS	International Satellite Communications System
IT	Information technology
ITIC	International Tsunami Information Center
ITSU	International Coordination Group for the Tsunami Warning System in the Pacific
JCSDA	Joint Center for Satellite Data Assimilation
LDAS	Land Data Assimilation Systems
Mesonet	any small-scale network of observations
MMS	Minerals Management Service
NASA	National Aeronautics and Space Administration
NAVOCEANO	Naval Oceanographic Office
NCEP	National Centers for Environmental Prediction
NCLF	National Civilian Labor Force
NDFD	NWS National Digital Forecast Database
NESDIS	NOAA's National Environmental Satellite, Data, and Information Service
NEXRAD	Next Generation Radar; the Weather Surveillance Radar (WSR) 1988-Doppler
NFA	NOAA Finance and Administration
NFDRS	National Fire Danger Rating System
NGDC	NOAA's National Geophysical Data Center
NMAO	NOAA Marine and Aviation Operations
NMFS	NOAA's National Marine Fisheries Service
NMS	National Meteorological Service
NOAA	National Oceanic and Atmospheric Administration
NOS	NOAA's National Ocean Service
NRCS	Natural Resources Conservation Service
NSF	National Science Foundation
NWA	National Weather Association
NWP	numerical weather prediction
NWR	NOAA Weather Radio
NWS	NOAA's National Weather Service
NWSEO	National Weather Service Employees Organization
NWSTG	National Weather Service Telecommunications Gateway
NWWS	NOAA Weather Wire Service
OAR	NOAA's Office of Oceanic and Atmospheric Research
OGP	NOAA's Office of Global Program

OLAP	On-Line Analytical Processing
Profiler	type of radar which is designed to measure vertical wind and/or temperature structure of the atmosphere
PTWC	Pacific Tsunami Warning Center
R&D	Research and Development
RFC	River Forecast Center
RRS	Radiosonde Replacement System
SACNAS	Society for the Advancement for Chicanos and Native Americans
SFA	Survey, Feedback, Action
SnowMIP	Snow models Intercomparison Project
SOPAC	South Pacific Applied Geoscience Commission
SPREP	South Pacific Regional Environmental Programme
StormReady	NWS outreach program to educate communities on preparedness for severe weather
Targeted Observations	“Opportunity-driven” observations taken for an actively chosen location, time, and/or variable in order to optimize the quality of NWP guidance
UCAR	University Corporation for Atmospheric Research
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USCG	United States Coast Guard
USGS	United States Geological Survey
USWRP	United States Weather Research Program
VAR	Variational Analysis
WFO	Weather Forecast Office
WMO	World Meteorological Organization
VOS	Voluntary Observing Ships
WC/ATWC	West Coast/Alaska Tsunami Warning Center
WRF	Weather Research and Forecast (community forecast model infrastructure and process)

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Appendix C – NWS Organizational Chart



For a complete list of NWS Offices see <http://www.weather.gov/organization.html>